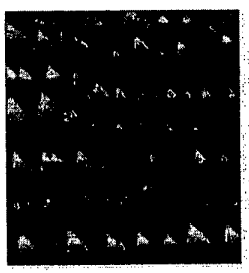


FIG. 1A

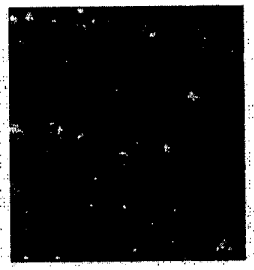


FIG. 1B

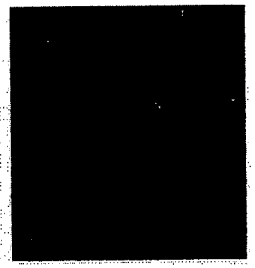


FIG. 1C

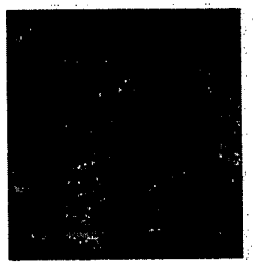


FIG. 1D

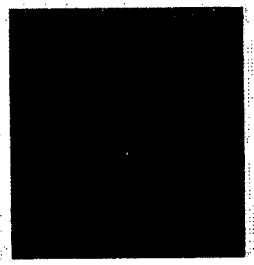


FIG. 1E

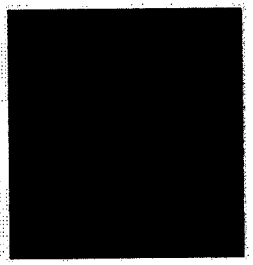


FIG. 1F

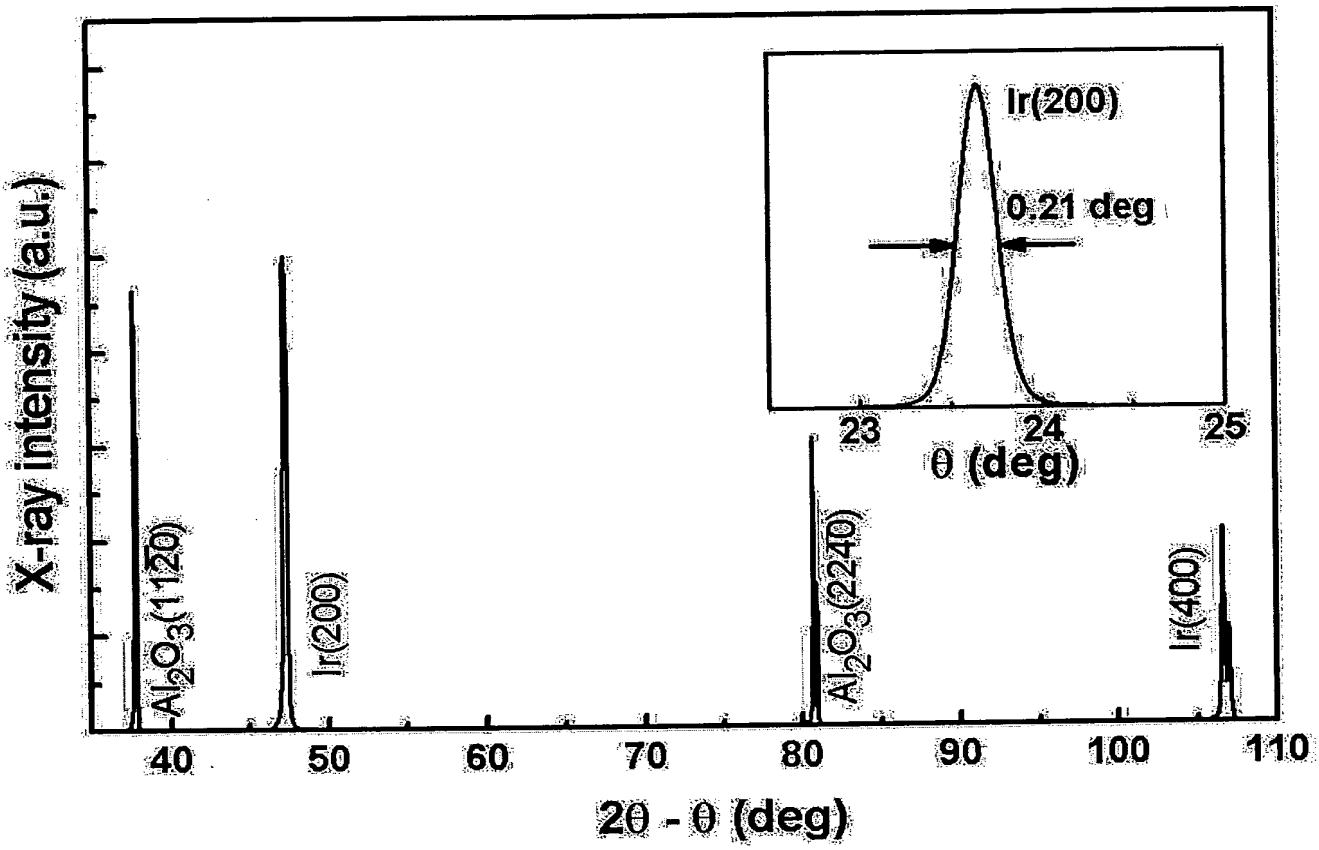

X-ray intensity (a.u.)
$Al_2O_3(11\bar{2}0)$
Ir(200)
$Al_2O_3(2240)$
Ir(400)
40
50
60
70
80
90
100
110
2θ - θ (deg)
Ir(200)
0.21 deg
23
24
25
θ (deg)

FIGURE 2

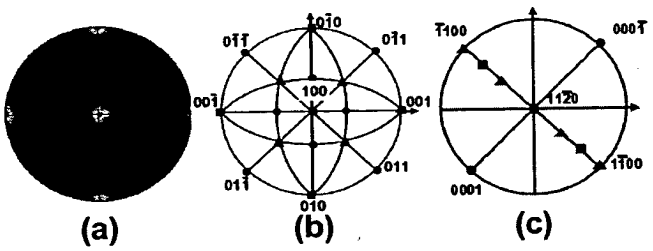


FIGURE 3

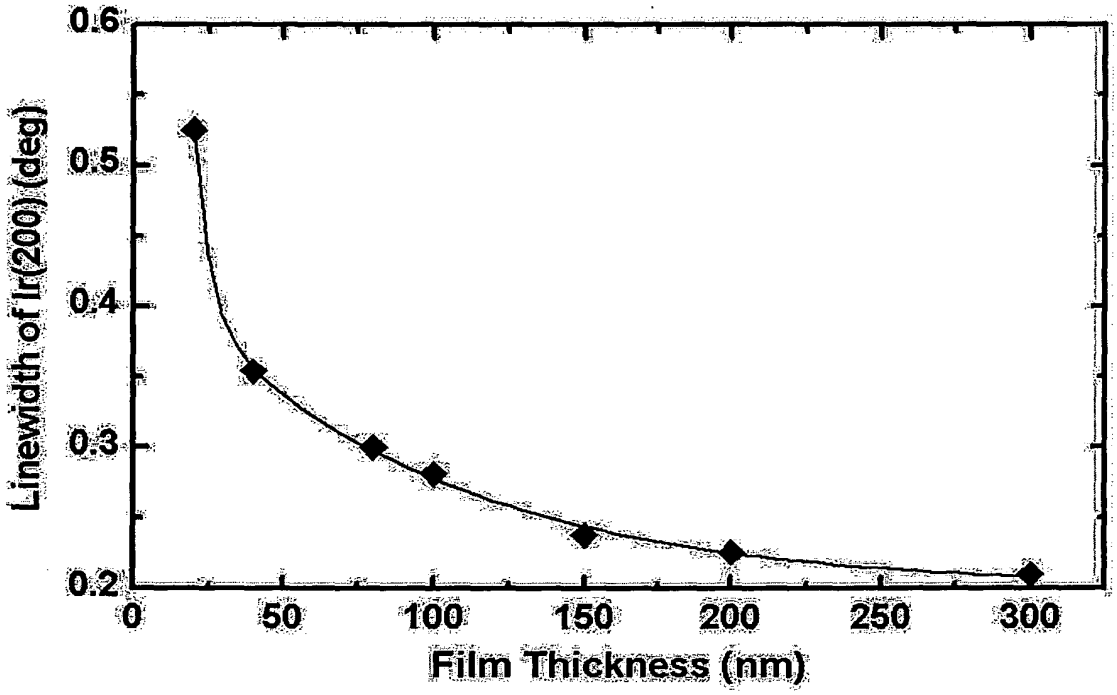

0.6
0.5
0.4
0.3
0.2
Linewidth of Ir(200) (deg)
0
50
100
150
200
250
300
Film Thickness (nm)

FIGURE 4

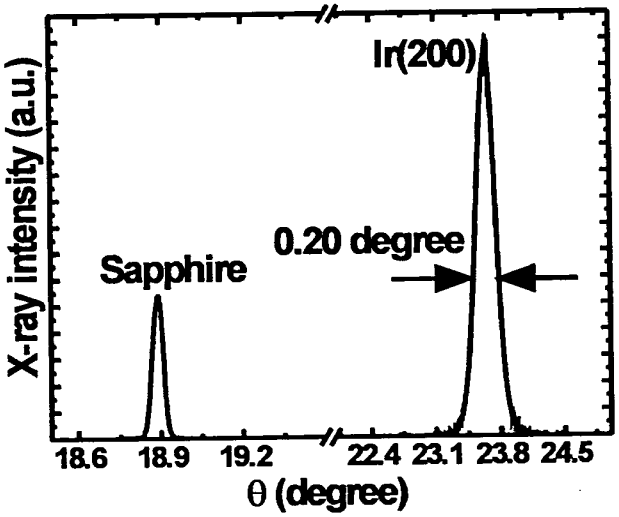

Ir(200)
0.20 degree
Sapphire
X-ray intensity (a.u.)
18.6
18.9
19.2
22.4
23.1
23.8
24.5
θ (degree)

FIGURE 5

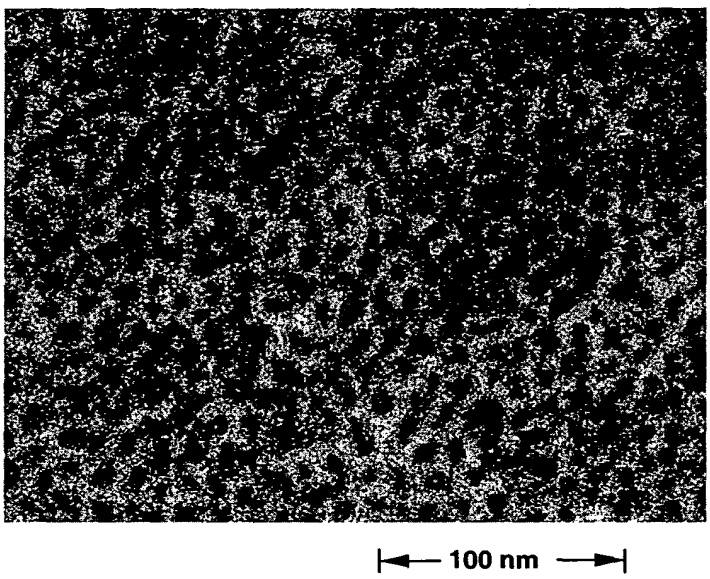


FIGURE 6

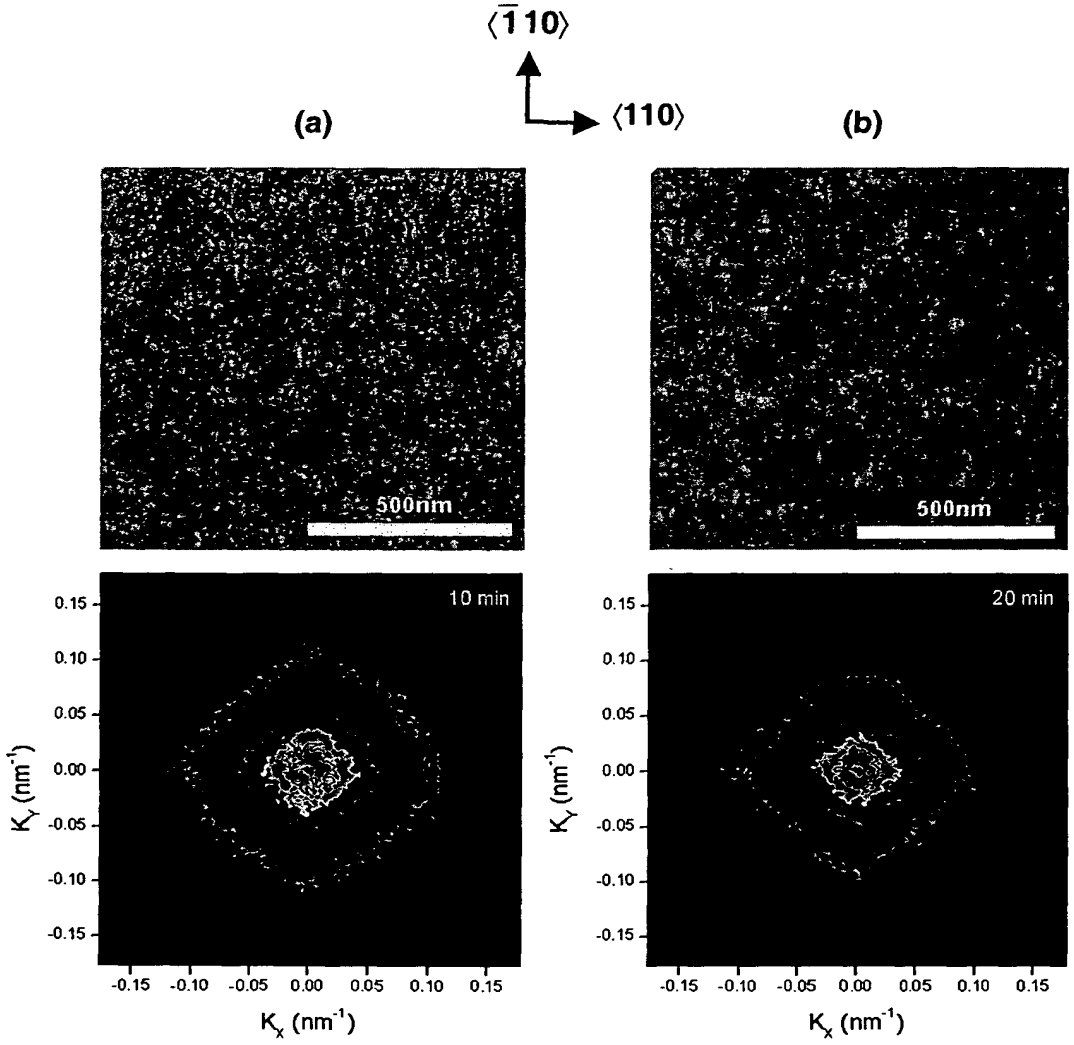

⟨1̄10⟩
⟨110⟩
(a)
(b)
500nm
500nm
10 min
20 min
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
K_Y (nm^{-1})
-0.15 -0.10 -0.05 0.00 0.05 0.10 0.15
K_x (nm^{-1})

FIGURE 7

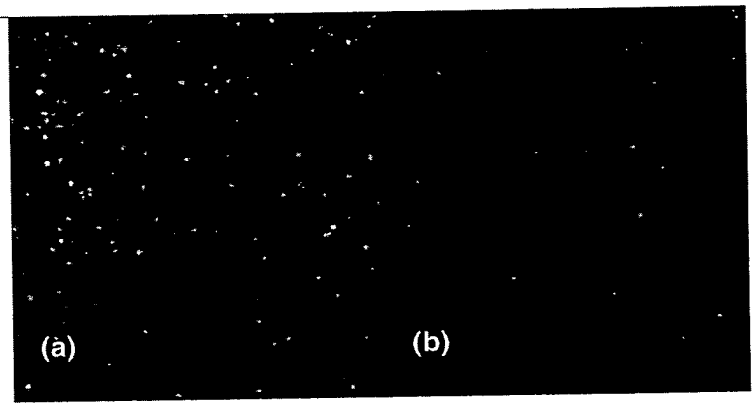


FIGURE 8

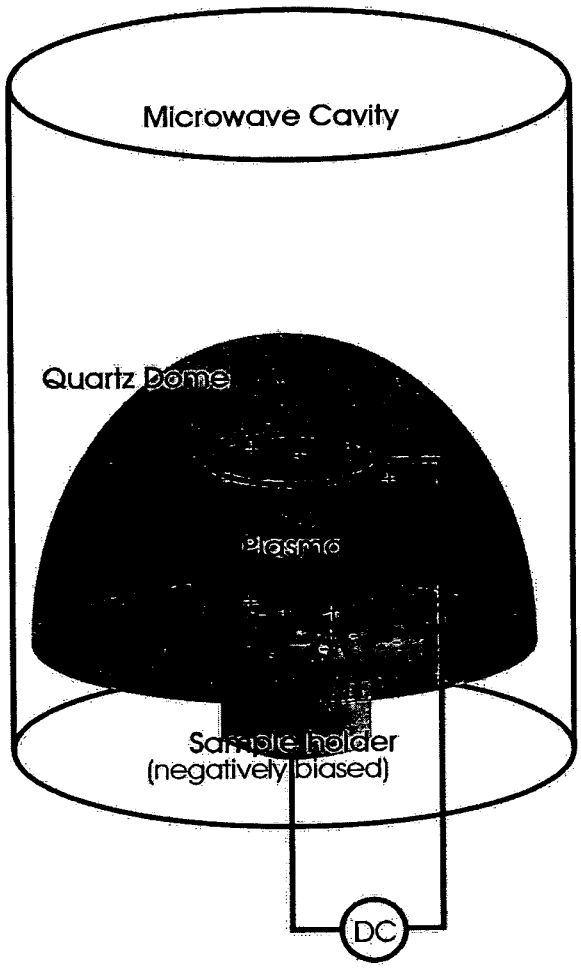
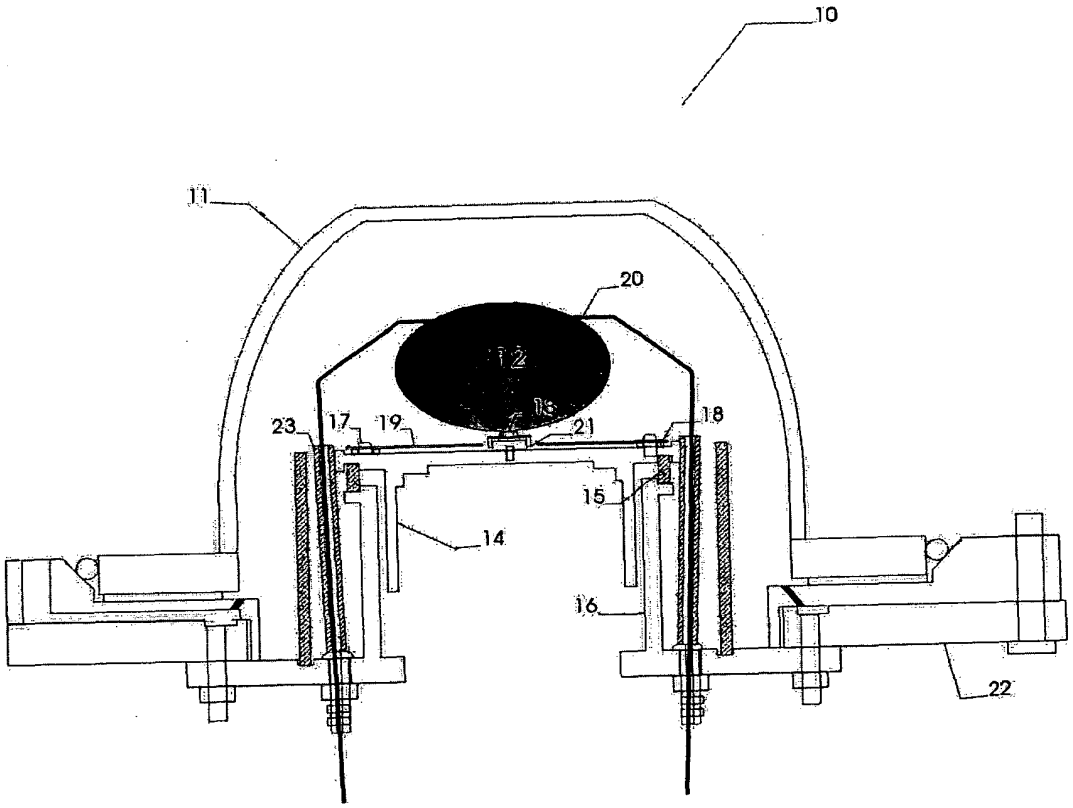

Microwave Cavity
Quartz Dome
Plasma
Sample holder
(negatively biased)
DC

FIGURE 9A



11. Quartz dome
12. Plasma discharge
13. Secondary discharge
14. Isolated stage
15. Quartz isolation ring
16. Grounded stage
17. Alumina peg
18. Alumina washer
19 Silicon mask
20. Bias ring and supports
21. Molybdenum sample holder
22. Vacuum chamber baseplate
23. Quartz tubing to isolate bias ring supports

FIGURE 9B

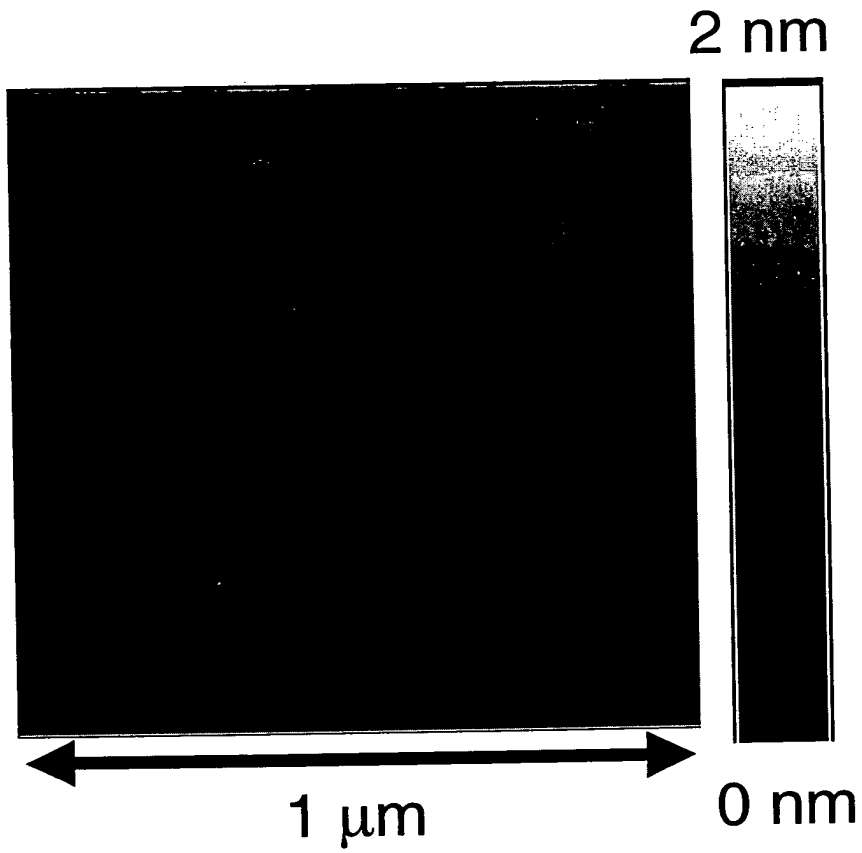


FIGURE 10

FIGURE 11

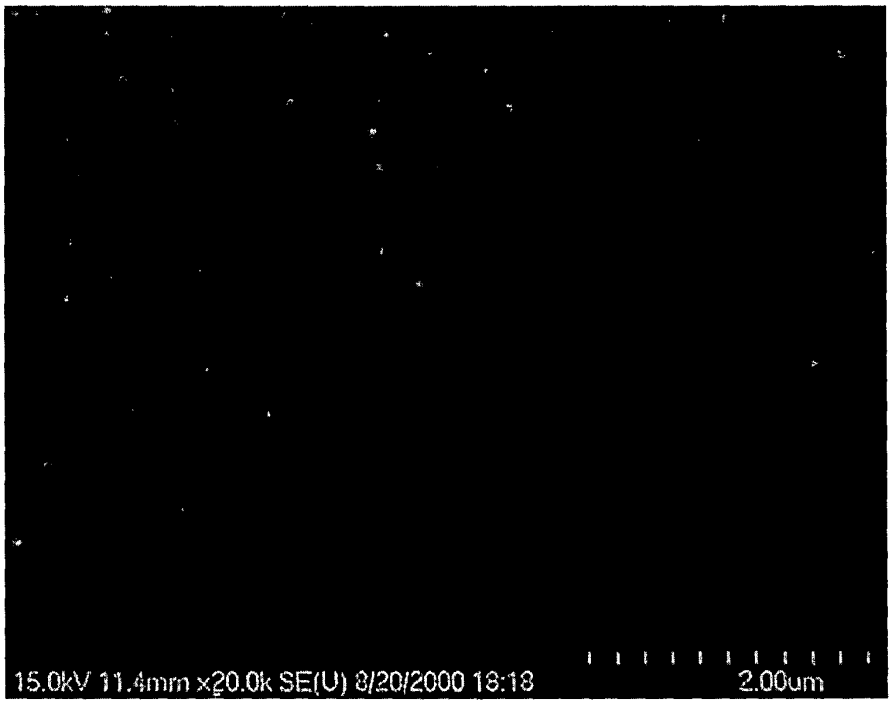


FIGURE 12

FIGURE 13A

FIGURE 13B

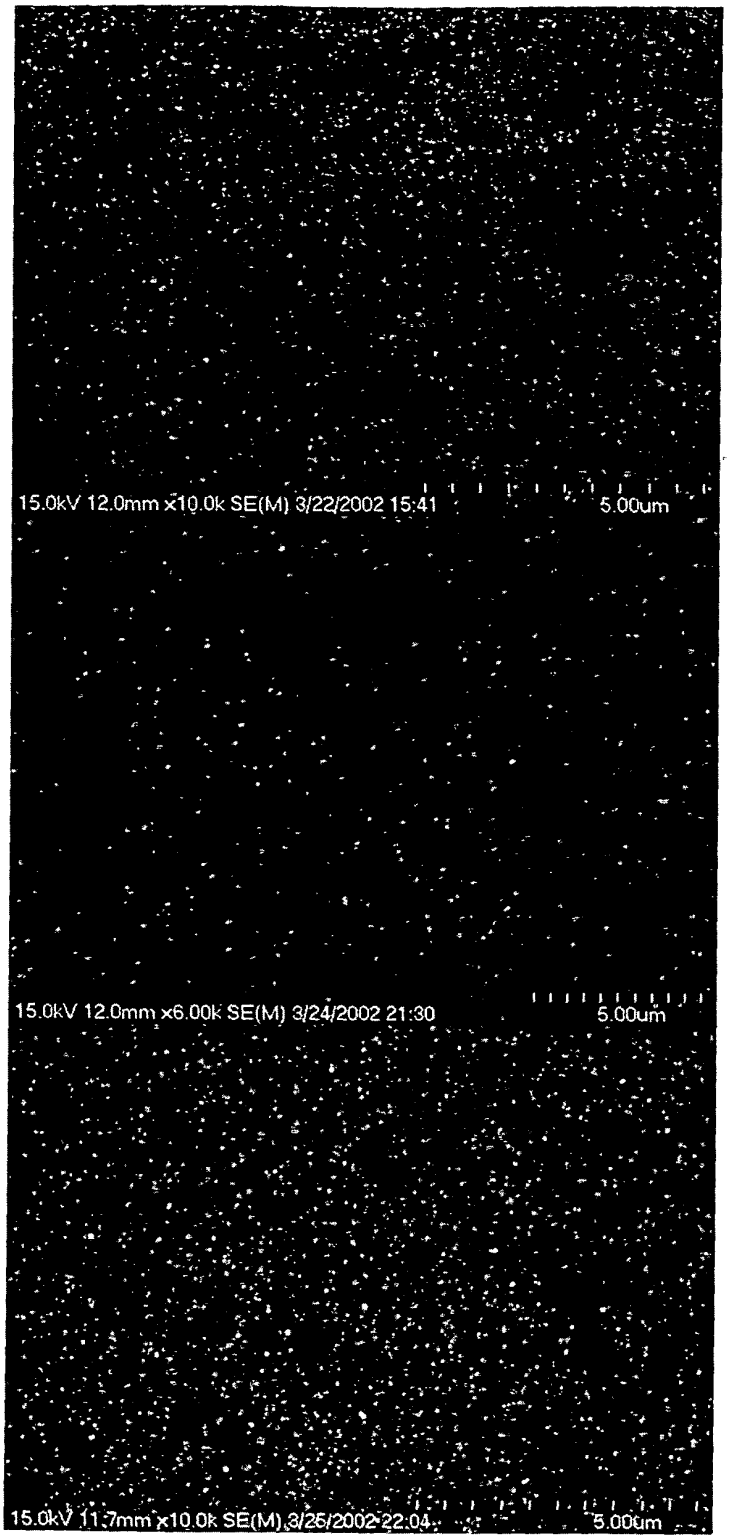


FIGURE 14A

FIGURE 14B

FIGURE 14C

Example of a sheet from the diamond database. A sheet is generated for each experiment of diamond growth. This experiment was carried out on 31 August 2000, and represents the growth of a 25 μm thick diamond film in 36 hours.

SAMPLE ID: 32
DATE: 31-Aug-00
CVD operator:

INDEX

Precondition

Ion Gauge (torr):	3.2-E-06
RGA (torr):	
PP(H_2O):	
PP(N_2):	
PP(O_2):	
Start time:	
RM temp (°C):	25
Rel. Hum (%):	60

Geometry:

Cap #ID:	
Cap Size:	
Geometry:	
Post #:	
Bias Ring#:	
Ring Height(mm):	32
Si mask#ID:	

Sample:

Substrate ID:	0818#3
Substrate type:	
Sample location:	

Notes/Comments:

Notebook #:	
Page #:	
Comment:	v. slow cool

Relation ID:

Input parameters

	carburization	bias	growth I	growth 2
MW POWER	1500	1500	1500	1500
MW %of full	14	14	14	14
GAS FLOW				
H_2	300	300	300	300
CH_4	6	6	3	3
Other (ppm)				
TIME		60	90	2070
PRESSURE	18	18	18	28
BIAS VOLTS				
I MEAN		40.0		
TEMP AVG		693	625	730
TC AVG		491	535	536

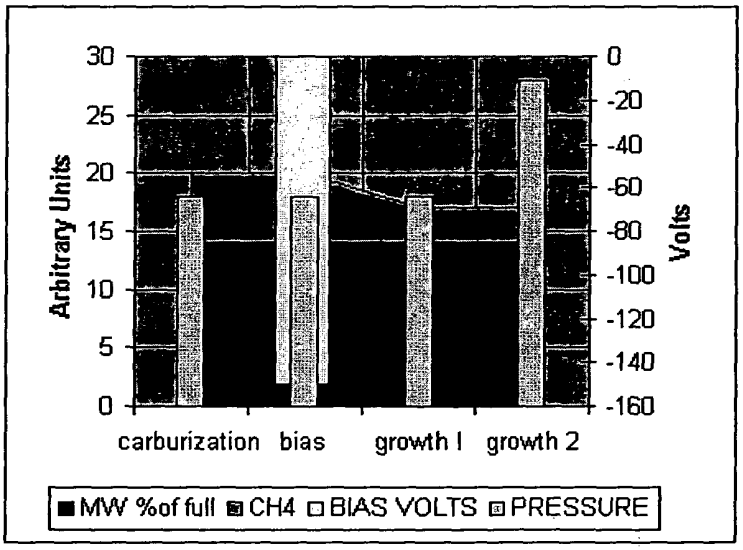


FIGURE 15

Second part of the database page. The graph shows the time-dependent temperature and bias current.

Images
Origin Data

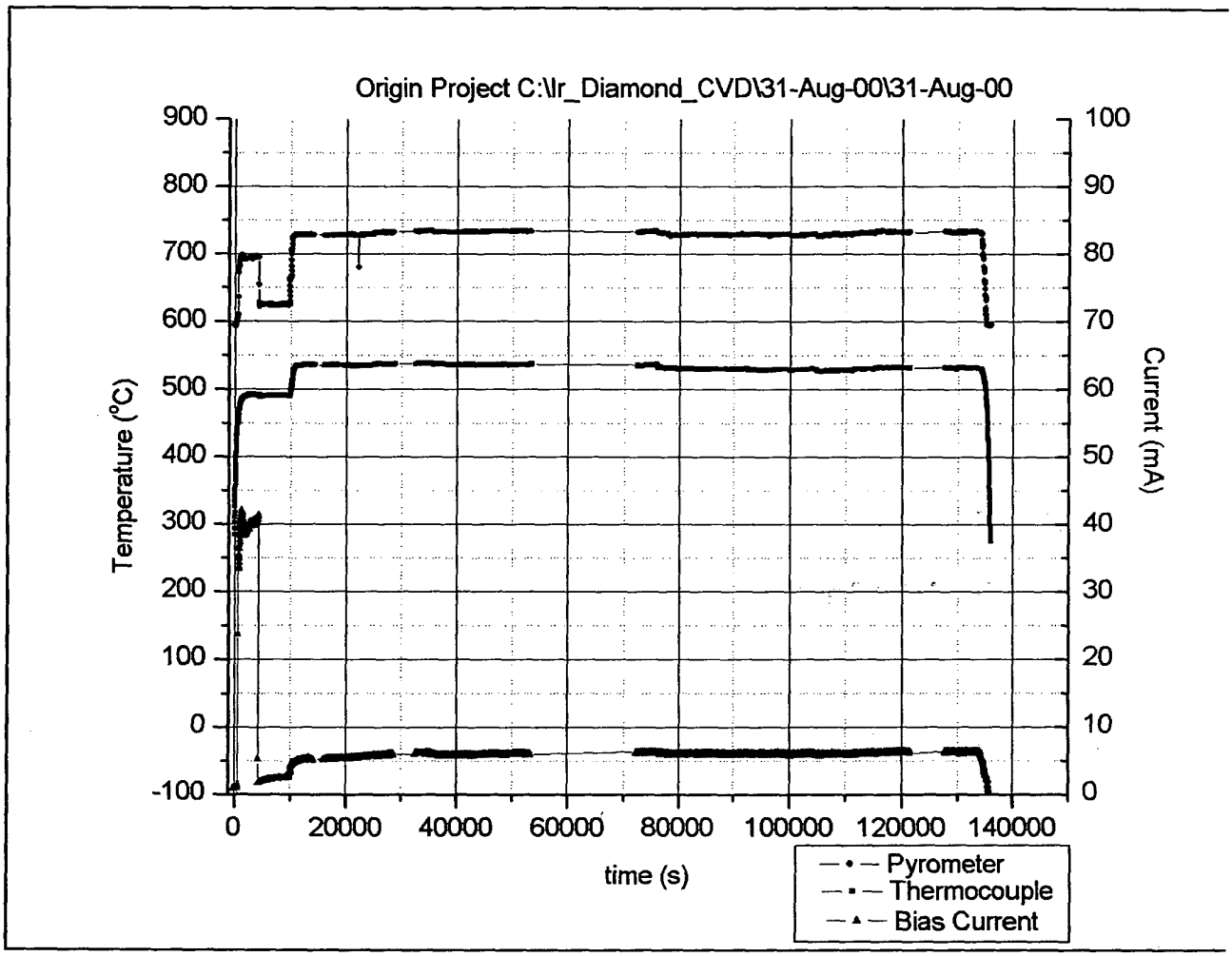


FIGURE 16

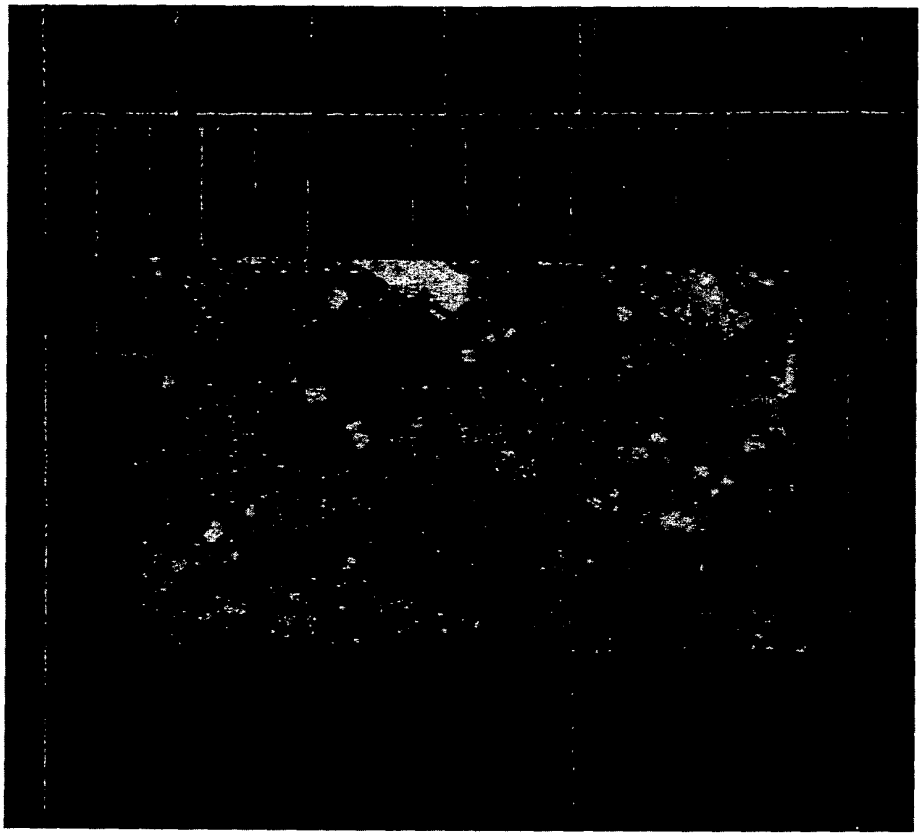


FIGURE 17

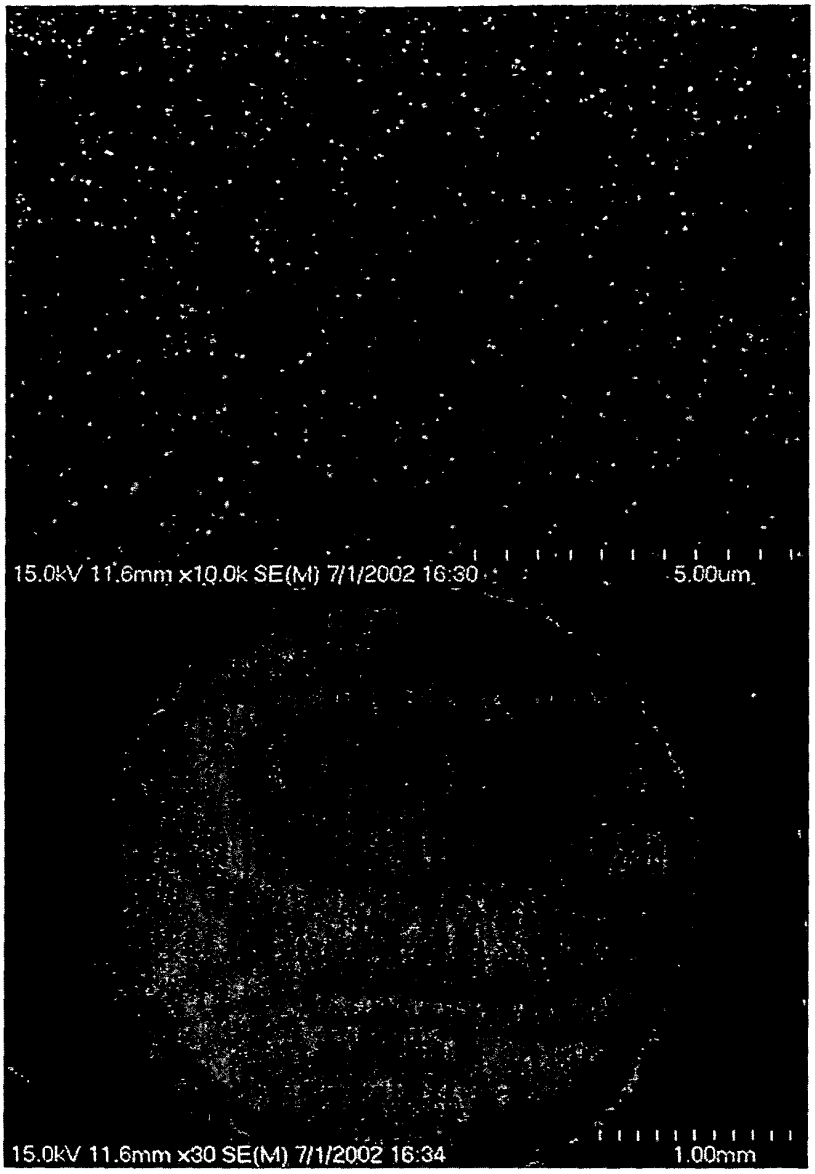


FIGURE 18A

FIGURE 18B

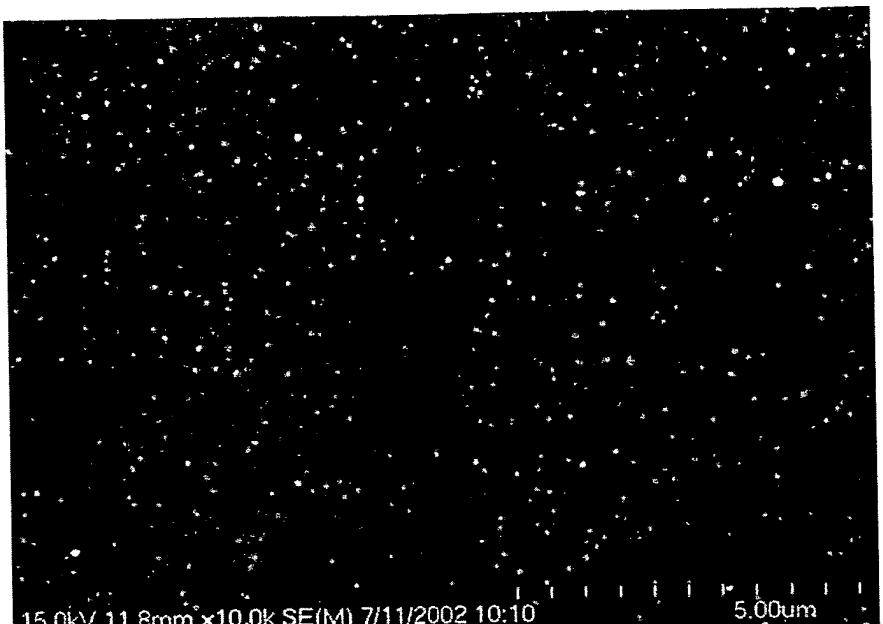


FIGURE 19A

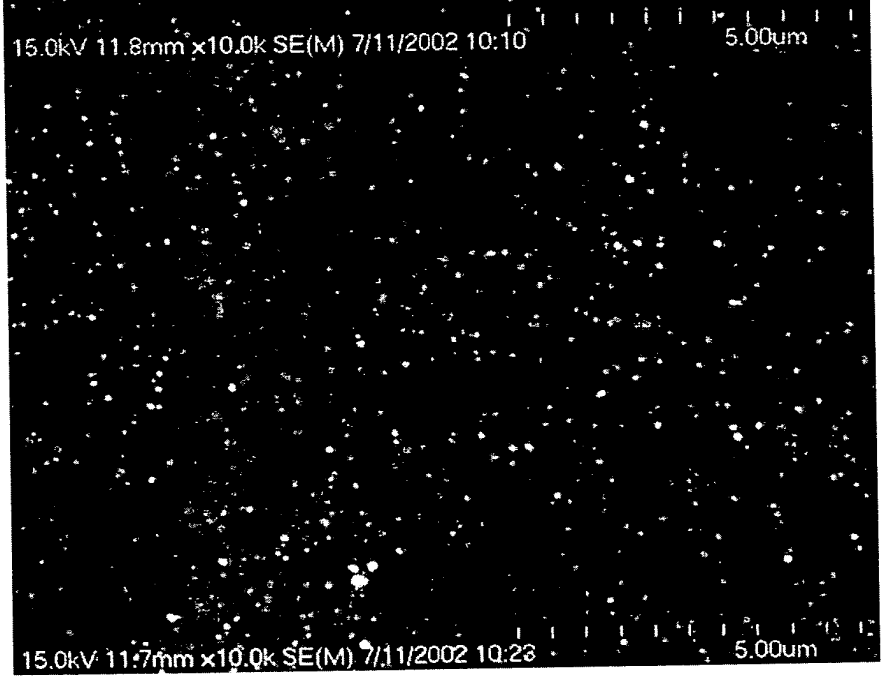


FIGURE 19B

SAMPLE ID: 225

DATE: 10-Apr-02

CVD operator:

INDEX

Pr condition	
Ion Gauge (torr):	4.5E-07
RGA (torr):	1.2E-06
PP(H_2O):	5.00E-10
PP(N_2):	1.00E-10
PP(O_2):	1.00E-10
Start time:	9:00:00 AM
RM temp (°C):	22
Rel. Hum	30

Geometry:	
Cap #ID:	9
Cap Size:	
Geometry:	round
Post #:	7
Bias Ring#:	4
Ring Height(mm):	32
Si mask#ID:	11

Sample:

Substrate ID:	04052002#60
Substrate type:	Ir/a-ALO
Sample location:	

N tes/Comments:

Notebook #	
Page #	
Comment:	three hr run

Relation ID:

Input parameters	carburization	bias	growth I	growth 2
MW POWER	1500	1500	1500	1500
MW %of full	14	14	14	14
GAS FLOW				
H_2	300	300	300	
CH_4	6	6	3	
Other (ppm)				
TIME	12	60	180	
PRESSURE	18	18	18	
BIAS VOLTS				
I MEAN		39.0		
TEMP AVG		699	629	
TC AVG		471	470	

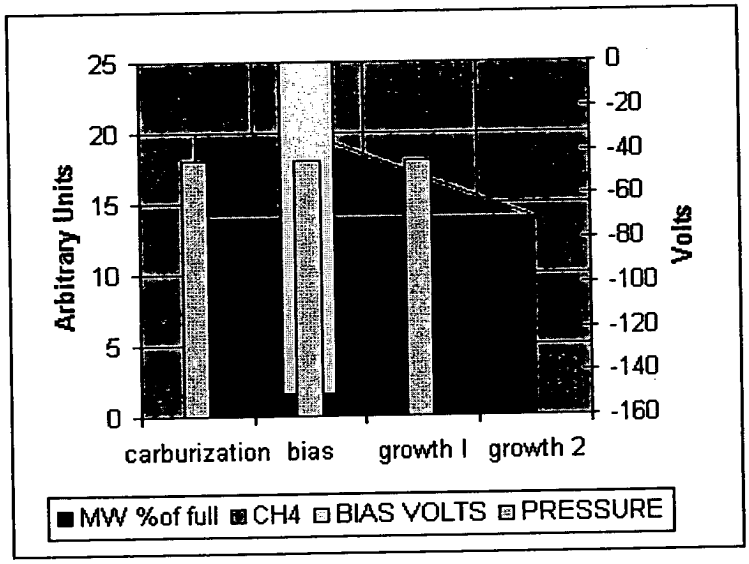


FIGURE 20

Images
Origin Data

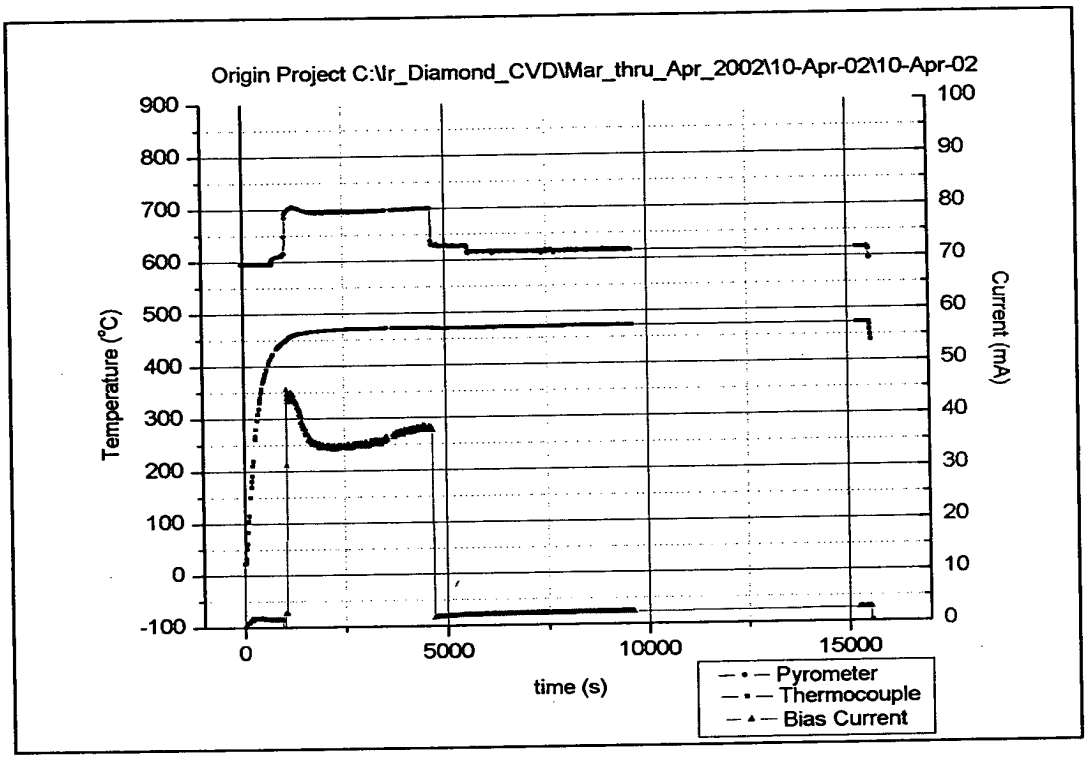


FIGURE 21

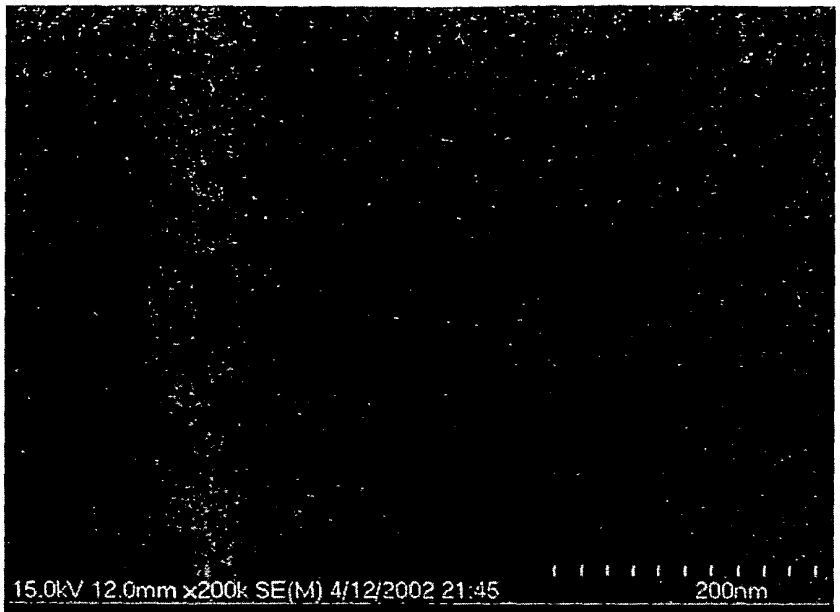


FIGURE 22

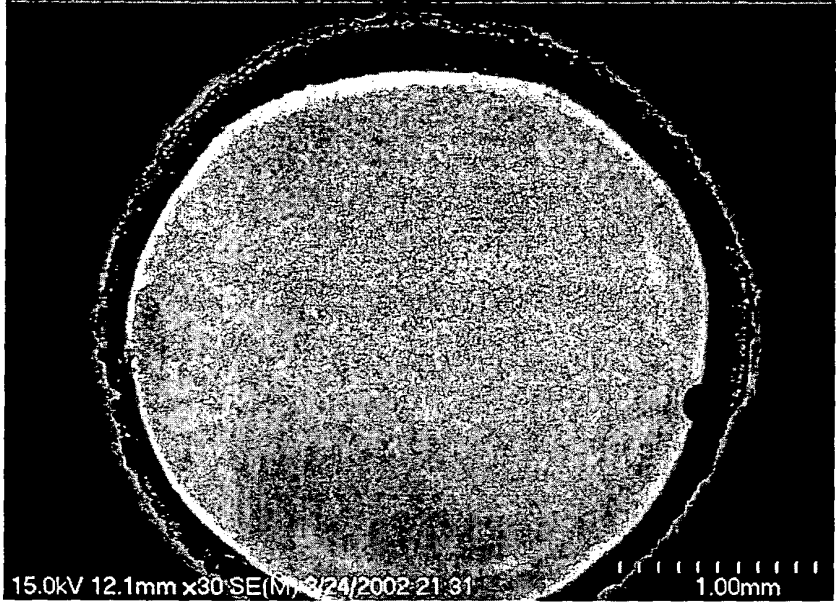


FIGURE 23